The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board

Paper No. 31

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte YONG-GEUN KIM

Appeal No. 1999-0344
Application 08/250,770

HEARD: January 24, 2001

Before THOMAS, HAIRSTON and LEVY, Administrative Patent Judges.

THOMAS, Administrative Patent Judge.

DECISION ON APPEAL

Appellant has appealed to the Board from the examiner's final rejection of claims 1 through 24.

Representative claim 1 is reproduced below:

1. An electrophotographic developing type reproduction apparatus, comprising:

data transmitting means for generating converted data by converting input data, to be printed as video data, in accordance with a first clock signal, and for transmitting the converted data in response to a horizontal synchronization signal exhibiting a predetermined time interval;

chopping means for providing chopped data by dividing the converted data from said data transmitting means in accordance with a second clock signal; and

printing control means for providing beam data in response to said chopped data, for controlling printing of the video data by generating electrical signals to control generation of a laser beam by a light source element;

said print control means generating said horizontal synchronization signal in correspondence with a beam detection signal derived from the laser beam by the light source element.

The following references are relied on by the examiner:

Tomita et al. (Tomita)	4,918,462	Apr. 17, 1990
Hayashi et al. (Hayashi)	4,989,039	Jan. 29, 1991

Claims 1 through 24 stand rejected under 35 U.S.C. § 103. As evidence of obviousness, the examiner relies upon appellant's admitted prior art including Figure 1, further in view of Tomita and Hayashi.[1]

Rather than repet the positions of the appellant and the examiner, reference is made to the brief, reply brief and answer for the details thereof.

---

[1] Although the examiner expressly relies upon Figures 2A-2D in the statement of the rejection at page 5 of the answer, we agree with the appellant's observation at the top of page 7 of the reply brief that the dispute between the appellant and the examiner as to whether these figures are prior art is moot since the examiner has not expressly relied upon these figures in any analysis or responsive arguments in the answer.

OPINION

After duly considering the positions of the appellant and the examiner as set forth in the respective briefs and answer, and conducting a thorough study of the applied prior art as applied against the present claims on appeal, we conclude that claims 1 through 24 would have been obvious to the artisan within 35 U.S.C. § 103 as argued by the examiner in the answer. Our reasoning which follows is a more abbreviated rationale of combinability and applicability than that set forth by the examiner in the answer based upon the same applied prior art. We also note that appellant has presented arguments only as to independent claim 1 and its respective dependent claims 5, 7 and 11 and that no arguments have been presented in the brief and reply brief as to any other remaining claim on appeal.

As a starting point according to the examiner's reasoning, the admitted prior art Figure 1 teaches the bulk of the subject matter set forth in independent claim 1 on appeal including the data transmitting means clause, substantially all of the printing control means clause except for the responsive language to the chopped data, and the print control means generating the horizontal synch signal at the end of claim 1 on appeal. Admitted prior art Figure 1 does not teach at all the claimed chopping means operating in accordance with the second clock signal, where the chopping means in turn causes the printing control means to be responsive to that data generated by the

chopping means clause in claim 1. Appellant's admitted prior art Figure 1 is discussed in general or specifically at page 1, line 10 through page 3, line 17 (or possibly to page 4, line 2); page 7, lines 1 and 2; page 7, line 12 through page 8, line 20 and page 9, line 12 through page 10, line 8.

The examiner's reasoning is set forth in greater detail than necessary as it applies to claim 1 on appeal at page 5 of the answer. Page 6 begins the examiner's consideration of the teaching value of Tomita as applied to the admitted prior art to suggest essentially the claimed chopping means and it being fed a second clocking source as a basis for modifying the teachings of the admitted prior art. We generally agree with this assessment as amplified in the following comments. Tomita's invention as well as his discussion of the prior art to him is in the context of a solid state scan type recording head having a plurality or an array of light emitting diodes LEDs for light emission purposes, which head is "suitable for recording based on an electrophotographic process." (Column 4, lines 37 and 38). The admitted prior art at columns 1 and 2 of Tomita discuss known problems with the prior art yielding non-uniformity of print density in accordance with various prior art approaches. Tomita's invention seeks to overcome this non-uniformity such that "unevenness in amount of adhesive toner in one dot is made extremely small." (Column 4, lines 39 and 40). In accordance with the examiner's general reasoning, we agree with the examiner's

position that in view of Tomita's linear array of light emitting diode teachings and the ability of the circuit in Figure 6 to broadly control them collectively, it would have been obvious to the artisan to utilize such teachings to control a single light emitting diode as in the admitted prior art Figure 1 device since controlling one such light emitting element is inclusive of controlling the plurality forming a linear array in accordance with Tomita's general teachings.

The examiner's reliance upon Figure 6 in the related additional figures is well taken. Tomita's showings and discussion in his patent generally indicate that a common shifting or clocking arrangement exists to control the shift register in the various pulse generating circuit elements in Figures 7 through 11 comparable to a common clock generator 40 associated with prior art Figure 1. The video image or pixel data associated with Figure 6 in Tomita is chopped or switched by the use of AND gates in element 3 comparable to the claimed feature of the chopping means and the depiction of this in appellant's disclosed Figure 3. Specific strobing pulses derived from the pulse signal selection circuit 7 effectively chop the picture element data from the register 4 in a comparable manner to that which is claimed in representative independent claim 1 on appeal. It is this pulse signal selection circuit 7 that is controlled by a remotely identified CPU in accordance with the general teaching at column 6, lines 6 through 14.

As generally noted in the abstract of Tomita, plural pulse signals different from each other in one of frequency and duty ratio or duty cycle are generated depending upon a different characteristic of a plurality of the particular light emitting elements comprising the array. Figures 7 through 9 of Tomita illustrate the pulse signal generator circuit 6 of Figure 6 in detail as comprising different circuit element approaches to arriving at a device yielding a variable duty cycle strobe signal to be fed to the pulse signal selection circuit 7 in Figure 6. Similarly, Figures 10 and 11 detail the manner in which a pulse signal generator circuit 6 of Figure 6 may be embodied when it is desired to vary the frequency rather than the pulse duration. Note also column 5, lines 4 through 11.

It is thus apparent to an artisan from a study of these teachings that it would have been highly desirable to have incorporated into appellant's admitted prior art Figure 1 a remote control device such as a computer CPU to establish a selective means of controlling the print density for the prior art light emitting imaging element of the beam scanning unit 30 at least to achieve a more uniform amount of print density than was achievable in the past. Moreover, this approach obviously would have enhanced the approach of the appellant's admitted prior art, considered a disadvantage, of the user repeatedly having to adjust the bias voltage and the intensity thereof by individually adjusting the print density control by a selecting switch in

accordance with appellant's admitted prior art Figure 1. The examiner's reliance upon Hayashi at column 3, lines 30 through 35 is cumulative as to this admitted prior art approach, but it is noted that there it is done to achieve a different type of printing ability for different types of original data to be reproduced, that is, a letter or a photograph original. Once the user selects the type of original, it would have been readily apparent to the artisan that the technique employed by Tomita would have permitted a high degree of uniformity of the print density for all of the electrophotographic copies to be made.

As to dependent claim 5, the mode selecting means includes the teaching just noted with respect to Hayashi but it also includes the admitted prior art approach of utilizing a mode selection switch to control the print density in accordance with the admitted prior art Figure 1. More significantly, however, the variability of the pulse selection to be provided the pulse signal selection circuit 7 in Tomita's Figure 6 would have been derivable selectively in accordance with the signals sent by the CPU data in addition to the actual pixel data sent to be imaged to register 4 in Figure 6 of Tomita. As noted by the examiner in the answer, his reliance upon the timing signal generator embodiment of Figure 11 in combination with the other noted teachings meet the features of dependent claim 7 on appeal. Finally, the features recited in dependent

claim 11 on appeal would have been obvious in accordance with the reasoning just discussed with respect to dependent claims 5 and 7.

Page 9 of appellant's brief argues the issue before us being "if one of ordinary skill in the art were looking for an alternate method for adjusting the density of printed images without adjusting the bias voltage of a developing unit in a laser printing device, such as that depicted in Prior Art Fig. 1, would one of ordinary skill in the art have looked to the Tomita and Hayashi patents?" Our earlier analysis with respect to these references indicates that we agree with the examiner's position that the artisan would have found it obvious to have employed the teachings especially in Tomita to achieve this objective. Simply put again, the teachings in Tomita to achieve uniformity of print density would have been, in our view, a strong motivation to the artisan to have utilized Tomita's approach and modify that of the admitted prior art Figure 1.

In accordance with later arguments in the brief, appellant's view as to what the issue is does not require that a bias voltage be changed at all. Therefore, the bias voltage known to exist with respect to the appellant's admitted prior art would obviously remain unchanged in the combination. Such a variable bias voltage feature is not recited in independent claim 1 on appeal. Hayashi's additional teachings of making more uniform the image print density when humidity problems are present associated with the laser printing device does not detract from combination of the admitted prior art

and Tomita simply because Hayashi takes the additional approach of adjusting the currents applied to the laser element to achieve a uniformity of image print density. In accordance with our earlier reasoning, Hayashi is cumulative as to the obviousness of the noted claims on appeal that appellant has chosen to argue.

It is significant to note that the claimed second clock signal is not recited in representative independent claim 1 on appeal to be any different than the first stated clock signal. That is, the frequency could be the same or lower or higher for the second clock signal than that recited for the first clock signal. As simplified by our reasoning set forth earlier in this opinion, we do not regard the examiner's bottom-line views of the admitted prior art combined with Tomita as being based on prohibited hindsight, speculation or unsupported generalities, or that the examiner has exercised merely an approach to pick and choose features of the prior art without a persuasive rationale as set forth the reply brief.

In view of the foregoing, the decision of the examiner rejecting claims 1 through 24 under 35 U.S.C. § 103 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

James D. Thomas
Administrative Patent Judge)
)
)
)
) BOARD OF PATENT
)
Kenneth W. Hairston) APPEALS AND
Administrative Patent Judge)
) INTERFERENCES
)
Stuart S. Levy)
Administrative Patent Judge)

JDT/cam

Robert E. Bushnell
1522 K Street, N.W.
Suite 300
Washington, DC 20005-1202